

Customer No.: 31561
Application No.: 10/065,345
Docket No.: 9069-US-PA

REMARKS

Present Status of the Application

It is noted with a great appreciation that the Examiner deems Claim 14-17 allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Claims 13-32 are pending of which claims 13 and 14 have been amended and claims 21-32 have been newly added to more explicitly describe the claimed invention. Amendments to claims 13 and 14 are fully supported Fig. 1E-1I.

Furthermore, the new proposed independent claim 28 recites the allowable subject matters of claims 13 and 14, and accordingly Claims 28-32 are allowable over the prior art of record.

It is believed that no new matter adds by way of amendments made to claims or otherwise to the application.

For at least the following reason, Applicants respectfully submit that claims 13-27 patently define over prior art of record and reconsideration of this application is respectfully requested.

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Discussion of the claim rejection under 35 USC 102

The Office Action rejected claims 13 and 18-20 under 35 USC 102(b) as being anticipated by the structure and process shown by Lin et al (US-6,583,466, hereinafter Lin).

Applicants respectfully disagree and traverse the above rejections as set forth below. Independent claim 13, as amended, is allowable for at least the reason that Lin substantially fails to teach or disclose each and every features of claim 13. More specifically, Lin substantially fails to teach or disclose a trench flash memory device comprising at least "a gate structure, which is located in the trench, comprising a tunnel oxide layer, a floating gate over the tunnel oxide layer, a gate dielectric layer over the floating gate and a control gate over the gate dielectric layer, wherein the tunnel oxide layer, the floating gate and the gate dielectric layer wrap around a bottom portion of the control gate", as required by the amended claim 13. The advantage that the tunnel oxide layer, the floating gate and the gate dielectric layer wrap around a bottom portion of the control gate is that the coupling ratio between the floating gate and the control gate can be effectively increased. Thus, the operating speed of the flash memory device can be effectively enhanced.

Instead, Lin substantially teaches, as shown in Figs. 1L, 2L, 4 and 5, tunnel oxide layer 22 is formed conformal to the trench, a floating gate 18 is formed over the tunnel oxide layer 22 within the trench, a gate dielectric layer 30 is formed over floating gate 18 and a control gate is formed over the gate dielectric layer. However, the floating gate do not wrap around the control gate. In other words, Lin

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substantially fails to teach or disclose a gate structure, wherein the tunnel oxide layer, the floating gate and the gate dielectric layer wrap around a bottom portion of the control gate.

Therefore, Lin fails to teach or disclose each and every features of the proposed independent claim 13, and therefore claim 13 should be allowed.

Furthermore, because the newly added proposed independent claim 21 also recites features similar to claim 13, therefore, Applicants similarly submit that the newly added proposed independent claim 21 also patently define over Lin for at least the same reasons discussed above.

Claims 18-20 and 22-27, which depend from independent Claims 13 and 21, directly or indirectly, are also patentable over Lin, at least because of their dependency from an allowable base Claim.

Furthermore, because the newly added proposed independent claim 28 recites the allowable subject matter of claim 14, and therefore claims 27-32 patently define over Lin as well.

For at least the foregoing reasons, Applicants respectfully submit that Claims 13, and 18-32 patently define over Lin, and therefore should be allowed. Reconsideration and withdrawal of the above rejections is respectfully requested.

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CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 13-32 of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted

Date :

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